

Mr. Richard Carpenter
AlliedSignal, Inc.
3520 Westmoor Street
South Bend, IN 46628

Re: 141-11205-00172
Modification to CP-141-9999-00172

Dear Mr. Carpenter:

AlliedSignal, Inc., was issued a Construction Permit (CP 141-9999-00172) on December 14, 1998, for construction and operation of twenty (20) internal flares to control volatile organic compounds (VOC) from the twenty (20) Carbon Vapor Deposition (CVD) units associated with the existing aircraft wheel and brake manufacturing operation. On December 28, 1998, AlliedSignal filed a Petition for Review on the issued permit and has since requested revisions to the limiting conditions and emission unit descriptions on the permit. The Office of Air Management (OAM) has determined that the following changes shall be made to the permit to resolve these issues (bold emphasis added to new language):

1. The source status description in Part A.1 of Section A on Page 4 of the permit shall be changed as follows because the current source definition is under debate:

Source Status:	Part 70 Permit Program
	Major Source, under PSD Rules;
	Major Source, Section 112 of the Clean Air Act

2. AlliedSignal, Inc., has requested to remove the electric carbonization furnaces (ECF) Nos. 4 and 5 from the permit. The units will not be constructed and operated as planned. Therefore, Item (a) of Part A.2 of Section A on Page 4 of the permit will be revised as follows:

- (a) ~~Four (4) electric carbonization furnaces, each with an estimated maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:~~

- (+) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3) each with an estimated maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). (Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)

- ~~(2) Two (2) new electric carbonization furnaces (ID Nos. ECF-4 and ECF-5)~~

~~5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471);~~

Additionally, the facility descriptions at the top of Section D.1 on Page 14 of the permit shall be revised as follows to be consistent with the removal of ECF-4 and ECF-5:

~~Four (4) Two (2) electric carbonization furnaces (ID Nos. ECF-2 through ECF-5 and ECF-3), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470. ECF-4 and ECF-5 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2), rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471).~~

3. The descriptions of the CVD units contained in Item (b) of Part A.2 of Section A starting on Page 4 of the permit shall be revised to reflect AlliedSignal's request to add six (6) of the existing CVD units (CVD-1, CVD-3, CVD-7, CVD-8, CVD-9, and CVD-11) to the random fiber process only. Previously, only CVD-2 was limited to operating the random fiber process. The descriptions have also changed to clarify the initial weight of brakes per batch the units are capable of processing and the reactant gas flow rates of the units. The revisions shall be as follows:
 - (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) One (1) existing CVD unit (ID No. CVD-1), with an estimated batch capacity of 2400 pounds (initial weight) of brakes and a ~~maximum~~ **nominal** total reactant gas flow of 360 scf per soak hour.
 - (2) One (1) existing CVD unit (ID No. CVD-2), newly modified to have an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process and a ~~maximum~~ **nominal** total reactant gas flow of 2000 standard cubic feet per soak hour.
 - (3) ~~Eleven (11)~~ **Six (6)** existing CVD units (ID Nos. ~~CVD-3 through CVD-13~~ **CVD-4, CVD-5, CVD-6, CVD-10, CVD-12 and CVD-13**), each with an estimated batch capacity of ~~5650~~ **8800** pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a ~~maximum~~ **nominal** total reactant gas flow of 2000 scf per soak hour for random fiber process or a ~~maximum~~ **nominal** total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
 - (4) **Five (5) existing CVD units (ID Nos. CVD-3, CVD-7, CVD-8, CVD-9, and CVD-11), each with an estimated batch capacity of 8800 pounds (initial weight) of brakes for random fiber process and with a nominal total reactant gas flow of 2000 scf per soak hour.**

- ~~(4)~~(5) One (1) CVD unit (ID No. CVD-14), with an estimated batch capacity of ~~5650~~ **8800** pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a ~~maximum nominal~~ total reactant gas flow of 2000 scf per soak hour for random fiber process or a ~~maximum nominal~~ total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
- ~~(5)~~(6) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with an estimated batch capacity of ~~5650~~ **8800** pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a ~~maximum nominal~~ total reactant gas flow of 2000 scf per soak hour for random fiber process or a ~~maximum nominal~~ total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.

The exhaust gas from the **soak phase of each CVD unit's cycle** CVD units shall be directed through the following flares for VOC control:

Additionally, the facility descriptions in Item (a) at the top of Section D.2 on Page 16 of the permit shall be revised as follows to be consistent with changes to A.2(b), above:

- (a) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units (ID Nos. CVD-1 through CVD-20):
- ~~(1) Unit CVD-1 has a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle;~~
 - ~~(2) Unit CVD-2 has a batch maximum capacity of 1000 pounds per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat-up, soak and cool-down phases; and~~
 - ~~(3) Each of units CVD-3 through CVD-20 has a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.~~

The exhaust gas from **the soak phase of** each CVD will be directed through the following enclosed flares for VOC control:

4. Condition B.5 (First Time Operation Permit) on Page 6 of the permit shall be revised as follows to clarify its intent (note: Page 6a has been added to provide space for new language):

B.5 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

- (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section; ~~verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.~~
- (1) **If the affidavit of construction verifies that the facilities covered in the Construction Permit were constructed as proposed in the application, then the facilities may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.**
- (2) **If the affidavit of construction does not verify that the facilities covered in the Construction Permit were constructed as proposed in the application, then the Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section Prior to beginning operation of the facilities.**
- (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
- (c) ~~Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.~~ **Upon receipt of the Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section, the Permittee shall attach it to this document.**

The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

The Permittee has submitted their Part 70 permit application (T141-7442-00005) on December 10, 1996, for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

5. Items (b) and (c) of Condition B.11 (Malfunction Condition) on Page 8 of the permit have been changed as follows to better reflect the language of 326 IAC 1-6:

B.11(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM; ~~using the Malfunction Report Forms (2 pages).~~ Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

B.11(c) Failure to report a malfunction of any emission control equipment **subject to the requirements of this rule (326 IAC 1-6)** shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

6. The following condition, C.1 (Major Source), has been removed from Page 9 of the permit:

C.1 ~~Major Source~~
~~Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) and 326 IAC 2-3 (Emission Offset), this source is a major source.~~

7. Item (e) of Condition C.4 (Asbestos Abatement Projects - Accreditation) on Page 10 of the permit shall be revised as follows:

C.4(e) Procedures for Asbestos Emission Control
The Permittee shall comply with the **applicable** emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). ~~Per~~ 326 IAC 14-10-4 emission control requirements are ~~mandatory~~ **applicable** for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

8. The possible procedures and applicable methods specified in Item (a) of Condition C.5 (Performance Testing) on Page 10 of the permit shall be changed to the following:

C.5(a) All testing shall be performed according to the provisions of 326 IAC 2-1-4 and 326 IAC 3-6 (Source Sampling Procedures) utilizing applicable procedures and analysis methods specified in 40 CFR ~~60~~ **51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75** or other procedures and methods approved by IDEM, OAM.

9. The following conditions, C.6 (Maintenance of Monitoring Equipment) and C.7 (Monitoring Methods), have been removed from Page 11 of the permit:

C.6 ~~Maintenance of Monitoring Equipment~~
(a) ~~In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) hour until such time as the continuous monitor is back in operation.~~
(b) ~~The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.~~

C.7 Monitoring Methods ~~[326 IAC 3]~~

~~Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.~~

10. Condition C.8 (Actions Related to Noncompliance Demonstrated by a Stack Test) on Page 11 of the permit shall be modified as follows:

C.8 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee also shall take appropriate action to minimize **excess** emissions from the affected facility while the response actions are being implemented. ~~IDEM, OAM shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAM within thirty (30) days of receipt of the notice of deficiency.~~
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline.
- (c) IDEM, OAM reserves the **right authority** to take any actions allowed under law to resolve noncompliant stack tests.

11. To clarify the term "regulated pollutants" as used in Condition C.9 (Emission Statement), Item (a)(2) of that condition on Page 12 of the permit has been revised as follows:

- C.9(a)(2) Indicate actual emissions of other regulated pollutants (**as that term is defined at 326 IAC 2-7-1(32)**) from the source, for purposes of Part 70 fee assessment.

12. Condition C.10 (Monitoring Data Availability) on Page 12 of the permit has been changed as follows to more clearly state the conditions intent:

C.10 Monitoring Data Availability

- (a) ~~With the exception of performance tests conducted in accordance with Section C- Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this permit shall be performed at all times the air pollution emitting equipment listed in Section D of this permit is operating.~~

- ~~(b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the air pollution emitting equipment is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this permit.~~
 - ~~(c) If the air pollution emitting equipment is operating but the associated air pollution control equipment monitoring parameters do not meet the criteria specified in Section D and if these conditions are not caused by a malfunction as defined in 326 IAC 1-2-39, additional observations and sampling should be taken with a record made of the nature of the condition. An excursion from a monitoring parameter does not constitute a violation of this permit, but failure to take corrective actions is considered a violation.~~
 - ~~(d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, as required by Section D Compliance Monitoring and Record Keeping requirements, reasons for this must be recorded. Failure to make the required observations, sampling, maintenance procedures, or record keeping is a violation of this permit.~~
 - (b) At its discretion, IDEM may excuse such failures providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.**
 - (c) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.**
13. Condition C.11 (General Record Keeping Requirements) on Pages 12 and 13 of the permit shall be modified as follows:
- C.11 General Record Keeping Requirements

 - (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of ~~three (3)~~ **two (2)** years and available upon the request of an IDEM, OAM, representative. The records may be stored elsewhere for the remaining ~~two (2)~~ **three (3)** years as long as they are available upon request. Upon request from an IDEM, OAM representative, the Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.
 - (b) Records of required monitoring information shall include, where specified in **Section D** of the permit:

 - (1) The date, place, and time of sampling or measurements;
 - (2) The dates analyses were performed;

- (3) The company or entity performing the analyses;
 - (4) The analytic techniques or methods used;
 - (5) The results of such analyses; and
 - (6) The operating conditions existing at the time of sampling or measurement.
 - (c) Support information shall include, where specified in **Section D** of the permit:
 - (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
 - (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.
- 14. The following language has been added to the facility description boxes in Section D.1 and D.2 of the permit (Pages 14 and 16, respectively) to make it clear that the information is descriptive in nature:

Facility Description - The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions:
- 15. The language of Condition D.1.1 (BACT Condition) on Page 14 of the permit shall be revised as follows to reflect the removal of electric carbonization furnaces ECF-4 and ECF-5 discussed in Item 2, above:
 - D.1.1 BACT Condition [326 IAC 8-1-6]
~~Each~~ **The** thermal oxidizer shall operate at all times that the corresponding electric carbonization furnaces are operated. When operating, the thermal incinerators shall maintain a minimum 90% overall destruction of the volatile organic compound (VOC).
- 16. Condition D.1.2 (Preventive Maintenance Plan) on Page 14 of the permit shall be changed to apply only to the control device as follows:
 - D.1.2 Preventive Maintenance Plan [326 IAC 1-6-3]
A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for ~~this facility and the control devices~~ **for this facility.**

17. Condition D.1.3 (Testing Requirements) on Page 14 of the permit shall be modified as follows to address changes in the construction and operation plans for the electric carbonization furnaces:

D.1.3 Testing Requirements [326 IAC 2-1-3]

Compliance stack tests shall be performed for VOC emissions from one set of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3, ~~and ECF-4 and ECF-5~~), within 60 days after the first set achieves maximum production rate, but no later than 180 days after initial start-up.

The electric carbonization furnaces commenced operation but have suspended operation as of April 19, 1999, before the compliance stack testing deadline (June 14, 1999). If these furnaces start-up production after April 19, 1999, the Permittee agrees to submit, prior to the start-up, written notice to IDEM of the start-up date, and to conduct compliance stack tests as described herein within 60 days after achieving maximum production rate, but no later than 90 days after recommencing start-up.

The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. ~~If the first set of furnaces is determined to be in non-compliance based on stack test results, IDEM may require a stack test on the second set of furnaces within thirty days after stack test results on the first set of furnaces.~~

18. The monitoring requirements specified in Condition D.1.4 (Monitoring) on Page 14 of the permit have been revised as follows:

D.1.4 Monitoring

- (a) ~~To assure compliance with Condition D.1.1, the~~ **The thermal incinerators shall maintain a minimum operating temperature of 1,600° F until the minimum operate within a minimum temperature range necessary to maintain a minimum 90% overall destruction of the volatile organic compounds (VOC) is determined in the compliance tests (described in Operation Condition D.1.3). Initially, that minimum operating temperature range shall be set at 1500 to 1600 degrees Fahrenheit (°F). If compliance testing determines a different range, the range shall be adjusted accordingly.**
- (b) A continuous monitoring system shall be installed and operated to monitor and record the operating temperature. This system shall be accurate to ±5.0 percent.
- ~~(b)~~(c) The Permittee shall include in its PMP a maintenance program to inspect regularly the continuous monitor for operating temperature, to conduct routine maintenance and calibration on such monitor, and to initiate and record appropriate response steps in the event that the monitor fails **or indicates that the thermal oxidizer is operating outside the minimum temperature range.**

~~(c) If the operating temperature of the thermal incinerators drops below 1600 °F, or a more appropriate temperature determined in the compliance stack tests, the Permittee shall take and document response actions to return the operating temperature to the required minimum level.~~

19. Record keeping requirements in Item (a) of Condition D.1.5 on Page 15 of the permit have been changed as follows to be consistent with revisions to the monitoring and preventive maintenance plan conditions of the permit:

D.1.5 (a) To document compliance with Condition ~~D.1.4~~ **D.1.4**, the Permittee shall maintain a log of daily thermal incinerator temperatures, ~~records of response actions taken as a result of operating temperature readings below the minimum temperature, and those additional inspections prescribed by the Preventive Maintenance Plan.~~

20. Condition D.2.1 (BACT Condition) on Page 16 of the permit shall be modified to clarify that volatile organic compounds are only emitted during the soak phase of the process. Based on stack testing results and the addition of CVD unit No. 21 under Significant Source Modification No. 141-10759-00172, the emission rate limit has been adjusted for CVD units 1 through 20. The revisions to the condition are as follows:

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from **the soak phase of** each CVD unit's **cycle** shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is **operated operating in the soak phase** and shall achieve an overall destruction efficiency of 98% with a maximum VOC emission rate of ~~0.288~~ **0.26** pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to ~~39~~ **37.7** tons of VOC emitted per year from ~~all of the~~ CVD units **Nos. 1 through 20** combined based on the average heat content of the process gas being 713 Btu per cubic foot and the maximum reactant gas inputs for each unit.

21. The carbon monoxide (CO) emission rate limits in Condition D.2.2 (Prevention of Significant Deterioration) on Page 16 of the permit have been revised based on stack test results and the addition of a new CVD unit (CVD-21) and flare under a separate Source Modification approval (141-10759-00172) such that PSD requirements do not apply. The condition shall be changed as follows:

D.2.2 Prevention of Significant Deterioration (PSD) Minor Source Limit [326 IAC 2-2]

(a) The carbon monoxide emissions from ~~each the~~ enclosed flares for **CVD units 4, 5, 6, 10, 12, 13, 14, 15, 16, 17, 18, 19, and 20** shall be limited to ~~4.97~~ **2.41** pounds per hour, **each, based on maximum soak phase operation of 5800 hours per year for the non-woven process.** Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

- (b) The chemical vapor deposition units ~~designated CVD-2 1, 2, 3, 7, 8, 9, and 11~~ shall operate only the random fiber process. Therefore, the prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.
22. Condition D.2.3 (Preventive Maintenance Plan) on Page 17 of the permit shall be changed to apply only to the control device as follows:
- D.2.3 Preventive Maintenance Plan [326 IAC 1-6-3]
A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for ~~these facilities and any~~ the control devices **of these facilities**.
23. The stack testing requirements in Condition D.2.4 (Testing Requirements) have been revised to reflect agreements made with AlliedSignal, Inc., after issuance of the permit. The changes are as follows:
- D.2.4 Testing Requirements [326 IAC 2-1-3]
- (a) Compliance stack tests shall be performed from a representative selection of two (2) of the eighteen (18) large CVD units (ID Nos. CVD-3 through CVD-20) within ~~90~~ **45** days after ~~issuance of this permit~~ **execution of the Stay Agreement**, using a test protocol (**submitted to IDEM on February 22, 1999**) determined in conjunction with the IDEM OAM Compliance Data Section. One set of these tests shall be performed on a unit during a non-woven batch cycle, and the other set of these tests shall be performed on a unit during a random fiber batch cycle.
- (b) The compliance tests shall be performed for the following pollutants to demonstrate the control efficiency of the flares, determine compliance **for carbon monoxide and volatile organic compounds (VOC)** with Prevention of Significant Deterioration (PSD) rules, and verify emission factors:
- (1) ~~the emission rate profile for volatile organic compounds (VOC) over the entire batch cycle shall be determined by an instrumental method providing continuous data;~~
- (2)(1) the inlet and outlet speciated volatile organic compounds (VOC) at the flare (including: acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene) shall be tested within **the third quarter of the soak cycle**, the portion of the batch determined to emit the highest level of VOCs;
- (3)(2) opacity testing shall be conducted during the VOC outlet testing of the flare; and
- (4)(3) the outlet carbon monoxide CO emission rate from the flare shall be tested;

24. The monitoring provisions in Condition D.2.5 (Monitoring) starting on Page 17 of the permit have been changed to revise the basis of the monitored parameter for VOC load to facilitate record keeping, add alarm language for absence of the flare pilot flame, and remove the visible emission notation requirements for the enclosed flares as follows:

D.2.5 Monitoring

To assure compliance with Conditions D.2.1 and D.2.2:

- (a) The input **rate** of total reactant gas to each CVD unit shall be measured **once per day** over the entire batch cycle. To monitor the volatile organic compound (VOC) load to the control flare, the Permittee shall record the ~~ratio of reactant gas feed rate to brake disk batch weight at least once daily when the CVD is in operation. Unless operated under conditions for which the Preventive Maintenance Plan (PMP) specifies otherwise, the ratio shall be maintained within a range established during the latest stack test to be indicative of normal operation and in compliance with the required destruction efficiency number and type of brake discs per batch.~~
- (b) Each enclosed flare shall have a flame present at all times that its respective CVD unit is ~~in operation~~ **operating in the soak phase**. A thermocouple or equivalent device shall be installed and operated to monitor ~~and record~~ the presence of a pilot flame for each flare **and to sound an alarm when the flame is not detected**. For each CVD unit **operating the non-woven process, the flare shall maintain a minimum operating temperature of 1000 degrees Celsius (°C) and a continuous monitoring system shall be installed and operated to monitor and record the operating temperature of the flare. This system shall be accurate to ±5.0 percent and capture temperature data at least once every fifteen (15) minutes. If the operating temperature of the flare for a CVD unit operating the non-woven process drops below the minimum operating temperature, the Permittee shall take and document response steps to return the operating temperature to the required minimum level.** In the event that a breakdown of the monitoring equipment occurs, the Permittee shall supplement monitoring with visual checks once per hour to ensure that a flame is present.
- (c) ~~Daily visible emission notations of each CVD flare stack exhaust shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.~~
 - (1) ~~For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.~~

- (2) ~~In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.~~
 - (3) ~~A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.~~
 - (4) ~~When an abnormal emission is observed, the Permittee shall take appropriate response actions to return the emissions to normal.~~
 - (d) The Permittee shall include in its PMP a maintenance program to inspect regularly the thermocouples or equivalent devices for monitoring and recording the presence of a pilot flame, to conduct routine maintenance and calibration on such monitors, and to initiate and record appropriate response steps in the event that the monitor fails.
25. The requirements of Condition D.2.6 (Record Keeping Requirements) have been modified as follows to be consistent with the changes to Condition D.2.5 in Item 24, above:
- D.2.6 (a) To document compliance with Conditions D.2.1 ~~and D.2.4~~, the Permittee shall maintain a record of the total reactant gas input to the CVDs and ~~initial brake disc batch weight for each batch run and a log of the number and type of brake discs per batch run~~ **daily ratio of reactant gas feed rate to initial batch disk weight and visible emission notations made for the CVD units and flares, along with the respective pilot flame monitoring data, any response actions taken to correct abnormal emissions, and any inspections prescribed by the Preventive Maintenance Plan.**
 - (b) **To document compliance with Condition D.2.5, the Permittee shall maintain flare temperature data for CVD units operating the non-woven process and records of response steps taken as a result of operating temperature readings below the minimum operating temperature of the flares for these units.**
 - ~~(b)~~(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

All other conditions of the permit (CP-141-9999-00172) shall remain unchanged and in effect. Please attach a copy of this modification to the front of the original construction permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Janusz Johnson, OAM at the above address; or by phone at 317-232-8325 or 1-800-451-6027 (dial "0" and ask for ext. 2-8325).

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

JKJ

cc: File - St. Joseph County
Northern Regional Office (NRO)
Air Compliance Section Inspector - Paul Karkiewicz
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

CONSTRUCTION PERMIT OFFICE OF AIR MANAGEMENT

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3520 Westmoor Street
South Bend, Indiana 46628-1373**

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR Part 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP141-9999-00172	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date: December 14, 1998
Permit Modification: 141-11205-00172	Pages Affected: 4, 5, 6, 6a, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information

The Permittee owns and operates an aircraft landing system manufacturing operation.

Responsible Official: Carl Montalbine
Source Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
Mailing Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
SIC Code: 3728
County Location: St. Joseph
County Status: Non-attainment for particulate matter (PM),
Attainment for all other criteria pollutants
Source Status: Part 70 Permit Program

A.2 Emission Units and Pollution Control Equipment Summary

The source is hereby authorized to construct the following emission units and pollution control devices:

- (a) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3) each with an estimated maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). (Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)
- (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) One (1) existing CVD unit (ID No. CVD-1), with an estimated batch capacity of 2400 pounds (initial weight) of brakes and a nominal total reactant gas flow of 360 scf per soak hour.
 - (2) One (1) existing CVD unit (ID No. CVD-2), newly modified to have an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process and a nominal total reactant gas flow of 2000 standard cubic feet per soak hour.

- (3) Six (6) existing CVD units (ID Nos. CVD-4, CVD-5, CVD-6, CVD-10, CVD-12 and CVD-13), each with an estimated batch capacity of 8800 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a nominal total reactant gas flow of 2000 scf per soak hour for random fiber process or a nominal total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
- (4) Five (5) existing CVD units (ID Nos. CVD-3, CVD-7, CVD-8, CVD-9, and CVD-11), each with an estimated batch capacity of 8800 pounds (initial weight) of brakes for random fiber process and with a nominal total reactant gas flow of 2000 scf per soak hour.
- (5) One (1) CVD unit (ID No. CVD-14), with an estimated batch capacity of 8800 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a nominal total reactant gas flow of 2000 scf per soak hour for random fiber process or a nominal total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
- (6) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with an estimated batch capacity of 8800 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a nominal total reactant gas flow of 2000 scf per soak hour for random fiber process or a nominal total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.

The exhaust gas from the soak phase of each CVD unit's cycle CVD units shall be directed through the following flares for VOC control:

- (c) One (1) new enclosed flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour, piloted by natural gas, and exhausting through stack S-FL-1.
- (d) Nineteen (19) new enclosed flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour, piloted by natural gas, and exhausting through stacks S-FL-2 through S-FL-20, respectively.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because it is a major source, as defined in 326 IAC 2-7-1(22)).

A.4 Prior Permit Conditions Superseded [326 IAC 2]

The terms and conditions of this permit supersede all terms and conditions in CP-141-8761-00005.

SECTION B GENERAL CONSTRUCTION AND OPERATION CONDITIONS

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

Construction Conditions [326 IAC 2-1-3.4]

B.1 General Construction Conditions

- (a) The data and information supplied with the application shall be the basis for this permit. Prior to any proposed change in construction which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1, the change must be approved by the Office of Air Management (OAM).
- (b) This permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Effective Date of Permit

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1-9(b)]

Pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.4 Permit Review Rules [326 IAC 2]

Notwithstanding Construction Condition B.5, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.5 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

- (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section.
 - (1) If the affidavit of construction verifies that the facilities covered in the Construction Permit were constructed as proposed in the application, then the facilities may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
 - (2) If the affidavit of construction does not verify that the facilities covered in the Construction Permit were constructed as proposed in the application, then the Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section Prior to beginning operation of the facilities.
- (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
- (c) Upon receipt of the Operation Permit Validation Letter from the Chief of the Permit

Administration & Development Section, the Permittee shall attach it to this document.

The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

- (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
- (c) The OAM shall reserve the right to issue a new permit.

B.9 Permit Revocation [326 IAC 2-1-9(a)]

This permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

B.10 Availability of Permit [326 IAC 2-1-3(l)]

The Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

B.11 Malfunction Condition [326 IAC 1-6-2]

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM. Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment subject to the requirements of this rule (326 IAC 1-6) shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

B.12 Permit No Defense [326 IAC 2-1-10] [IC 13]

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-7-5(1)]

C.1 ***** This condition has been deleted *****

C.2 Opacity [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Visible Emissions Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

- (a) Visible emissions shall not exceed an average of thirty percent (30%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

C.3 Operation of Equipment

Except as provided otherwise, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation, as described in Section D of this permit.

C.4 Asbestos Abatement Projects - Accreditation [326 IAC 14-10] [326 IAC 18] [40 CFR 61.140]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).

- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

- (e) Procedures for Asbestos Emission Control
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). 326 IAC 14-10-4 emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) Indiana Accredited Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Testing Requirements

C.5 Performance Testing [326 IAC 3-6] [326 IAC 2-1-4]

- (a) All testing shall be performed according to the provisions of 326 IAC 2-1-4 and 326 IAC 3-6 (Source Sampling Procedures) utilizing applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75 or other procedures and methods approved by IDEM, OAM.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) All test reports must be received by IDEM, OAM within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Monitoring Requirements

C.6 ***** This condition has been deleted *****

C.7 ***** This condition has been deleted *****

Corrective Actions and Response Steps

C.8 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee also shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline.
- (c) IDEM, OAM reserves the authority to take any actions allowed under law to resolve noncompliant stack tests.

The documents submitted pursuant to this condition do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements

C.9 Emission Statement [326 IAC 2-6]

- (a) The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual emission statement shall meet the following requirements:
 - (1) Indicate actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);

- (2) Indicate actual emissions of other regulated pollutants (as that term is defined at 326 IAC 2-7-1(32)) from the source, for purposes of Part 70 fee assessment.
- (b) The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30. The annual emission statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015
- (c) The annual emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAM, on or before the date it is due.

C.10 Monitoring Data Availability

- (a) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, as required by Section D Compliance Monitoring and Record Keeping requirements, reasons for this must be recorded.
- (b) At its discretion, IDEM may excuse such failures providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.
- (c) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

C.11 General Record Keeping Requirements

- (a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of two (2) years and available upon the request of an IDEM, OAM, representative. The records may be stored elsewhere for the remaining three (3) years as long as they are available upon request. Upon request from an IDEM, OAM representative, the Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.

- (b) Records of required monitoring information shall include, where specified in Section D of the permit:
 - (1) The date, place, and time of sampling or measurements;
 - (2) The dates analyses were performed;
 - (3) The company or entity performing the analyses;
 - (4) The analytic techniques or methods used;
 - (5) The results of such analyses; and
 - (6) The operating conditions existing at the time of sampling or measurement.
- (c) Support information shall include, where specified in Section D of the permit:
 - (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
- (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.1 FACILITY OPERATION CONDITIONS - Electric Carbonization Furnaces

Facility Description - The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions:

Two (2) electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470).

Emission Limitations and Standards

D.1.1 BACT Condition [326 IAC 8-1-6]

The thermal oxidizer shall operate at all times that the corresponding electric carbonization furnaces are operated. When operating, the thermal incinerators shall maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

D.1.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the control device for this facility.

Compliance Determination Requirements

D.1.3 Testing Requirements [326 IAC 2-1-3]

Compliance stack tests shall be performed for VOC emissions from one set of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), within 60 days after the first set achieves maximum production rate, but no later than 180 days after initial start-up.

The electric carbonization furnaces commenced operation but have suspended operation as of April 19, 1999, before the compliance stack testing deadline (June 14, 1999). If these furnaces start-up production after April 19, 1999, the Permittee agrees to submit, prior to the start-up, written notice to IDEM of the start-up date, and to conduct compliance stack tests as described herein within 60 days after achieving maximum production rate, but no later than 90 days after recommencing start-up.

The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.

Compliance Monitoring Requirements

D.1.4 Monitoring

- (a) The thermal incinerator shall operate within a minimum temperature range necessary to maintain a minimum 90% overall destruction of the volatile organic compounds (VOC). Initially, that minimum operating temperature range shall be set at 1500 to 1600 degrees Fahrenheit (°F). If compliance testing determines a different range, the range shall be adjusted accordingly.
- (b) A continuous monitoring system shall be installed and operated to monitor and record the operating temperature. This system shall be accurate to ± 5.0 percent.

- (c) The Permittee shall include in its PMP a maintenance program to inspect regularly the continuous monitor for operating temperature, to conduct routine maintenance and calibration on such monitor, and to initiate and record appropriate response steps in the event that the monitor fails or indicates that the thermal oxidizer is operating outside the minimum temperature range.

Record Keeping and Reporting Requirements

D.1.5 Record Keeping Requirements

- (a) To document compliance with Condition D.1.4, the Permittee shall maintain a log of daily thermal incinerator temperatures.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.2 FACILITY OPERATION CONDITIONS - CVD Units

Facility Description - The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions:

- (a) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units (ID Nos. CVD-1 through CVD-20).

The exhaust gas from the soak phase of each CVD will be directed through the following enclosed flares for VOC control:
- (b) One (1) new enclosed flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour, piloted by natural gas, and exhausting through stack S-FL-1.
- (c) Nineteen (19) new enclosed flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour, piloted by natural gas, and exhausting through stacks S-FL-2 through S-FL-20, respectively.

Emission Limitations and Standards

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from the soak phase of each CVD unit's cycle shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is operating in the soak phase and shall achieve an overall destruction efficiency of 98% with a maximum VOC emission rate of 0.273 pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to 37 tons of VOC emitted per year from CVD units Nos. 1 through 20 combined based on the average heat content of the process gas being 762 Btu per cubic foot and the maximum reactant gas inputs for each unit.

D.2.2 Prevention of Significant Deterioration (PSD) Minor Source Limit [326 IAC 2-2]

- (a) The carbon monoxide emissions from the enclosed flares for CVD units 4, 5, 6, 10, 12, 13, 14, 15, 16, 17, 18, 19, and 20 shall be limited to 2.41 pounds per hour, each, based on maximum soak phase operation of 5800 hours per year for the non-woven process. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.
- (b) The chemical vapor deposition units 1, 2, 3, 7, 8, 9, and 11 shall operate only the random fiber process. Therefore, the prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

D.2.3 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the control devices of these facilities.

Compliance Determination Requirements

D.2.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed from a representative selection of two (2) of the eighteen (18) large CVD units (ID Nos. CVD-3 through CVD-20) within 45 days after execution of the Stay Agreement, using a test protocol (submitted to IDEM on February 22, 1999) determined in conjunction with the IDEM OAM Compliance Data Section. One set of these tests shall be performed on a unit during a non-woven batch cycle, and the other set of these tests shall be performed on a unit during a random fiber batch cycle.
- (b) The compliance tests shall be performed for the following pollutants to demonstrate the control efficiency of the flares, determine compliance for carbon monoxide and volatile organic compounds (VOC) with Prevention of Significant Deterioration (PSD) rules, and verify emission factors:
 - (1) the inlet and outlet speciated volatile organic compounds (VOC) at the flare (including: acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene) shall be tested within the third quarter of the soak cycle the portion of the batch determined to emit the highest level of VOCs;
 - (2) opacity testing shall be conducted during the VOC outlet testing of the flare; and
 - (3) the outlet carbon monoxide CO emission rate from the flare shall be tested;

The emission tests shall be conducted while the CVD being tested is operating at ninety-five percent (95%) or more of its maximum operating capacity.

Compliance Monitoring Requirements

D.2.5 Monitoring

To assure compliance with Conditions D.2.1 and D.2.2:

- (a) The input rate of total reactant gas to each CVD unit shall be measured once per day over the entire batch cycle. To monitor the volatile organic compound (VOC) load to the control flare, the Permittee shall record the number and type of brake discs per batch.
- (b) Each enclosed flare shall have a flame present at all times that its respective CVD unit is operating in the soak phase. A thermocouple or equivalent device shall be installed and operated to monitor the presence of a pilot flame for each flare and to sound an alarm when the flame is not detected. For each CVD unit operating the non-woven process, the flare shall maintain a minimum operating temperature of 1000 degrees Celsius (°C) and a continuous monitoring system shall be installed and operated to monitor and record the operating temperature of the flare. This system shall be accurate to ± 5.0 percent and capture temperature data at least once every fifteen (15) minutes. If the operating temperature of the flare for a CVD unit operating the non-woven process drops below the minimum operating temperature, the Permittee shall take and document response steps to return the operating temperature to the required minimum level. In the event that a breakdown of the monitoring equipment occurs, the Permittee shall supplement monitoring with visual checks once per hour to ensure that a flame is present.

- (c) The Permittee shall include in its PMP a maintenance program to inspect regularly the thermocouples or equivalent devices for monitoring and recording the presence of a pilot flame, to conduct routine maintenance and calibration on such monitors, and to initiate and record appropriate response steps in the event that the monitor fails.

Record Keeping and Reporting Requirements

D.2.6 Record Keeping Requirements

- (a) To document compliance with Conditions D.2.1, the Permittee shall maintain a record of the total reactant gas input to the CVDs and a log of the number and type of brake discs per batch run.
- (b) To document compliance with Condition D.2.5, the Permittee shall maintain flare temperature data for CVD units operating the non-woven process and records of response steps taken as a result of operating temperature readings below the minimum operating temperature of the flares for these units.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for Permit Modification

Source Background and Description

Source Name:	AlliedSignal, Inc.
Source Location:	3520 Westmoor Street, South Bend, Indiana 46628-1373
County:	St. Joseph
Permit Modification No.:	141-11205-00175
SIC Code:	3728
Permit Reviewer:	Janusz Johnson

The Office of Air Management (OAM) issued a Construction Permit (CP 141-9999-00172) to AlliedSignal, Inc., on December 14, 1998. This permit covered the construction and operation of twenty (20) internal flares to control volatile organic compounds (VOC) from the twenty (20) Carbon Vapor Deposition (CVD) units associated with the existing aircraft wheel and brake manufacturing operation. The flares were installed as an alternative to the turbine control system permitted under CP-141-8761 (issued July 2, 1998). Additionally, the permit approved the modification of one of the smaller CVD units (CVD-2) to increase its capacity. For the purposes of review of the new facilities under Prevention of Significant Deterioration requirements (326 IAC 2-2), six (6) CVD units (CVD-15 through CVD-20) originally permitted under CP-141-8761 were also included.

This modification to CP-141-9999-00172 revises some permit language as a resolution to a Petition for Review filed by AlliedSignal on December 28, 1998. Additionally, AlliedSignal has requested that the equipment descriptions and emission limitations for the chemical vapor deposition (CVD) units be revised. Six (6) CVD units (Nos. 1, 3, 7, 8, 9 and 11) will be limited to operating the random fiber process only, and the carbon monoxide (CO) emission rate limit for the CVD units which can run the non-woven process (Nos. 4, 5, 6, 10, and 12 through 20) will be changed to 2.41 pounds per hour. The hours that the CVD units will be operated in the soak phase and the initial weight of brakes loaded in each batch have been increased. AlliedSignal has also requested to remove two (2) of the electric carbonization furnaces (ECF) from the permit because the units will not be constructed and operated as planned. The changes to the emission unit descriptions and limits, and the revisions to other permit language are detailed in the permit modification letter. The potential to emit (PTE) of these facilities will decrease as a result of the changes made.

Enforcement Issue

IDEM is aware that some of the emission units at the source may have been constructed and operated prior to receipt of a construction and operation permit. IDEM is reviewing this matter and will take appropriate action.

Stack Summary

There are no new emission points associated with these changes. Stack No. 471 will be removed from the permit due to the removal of the electric carbonization furnaces (ECF-4 and ECF-5).

Recommendation

The staff recommends to the Commissioner that this permit modification be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the original permit application and additional information submitted by the applicant.

Emission Calculations

See Appendix A of this document for revised emissions calculations (2 pages).

Potential to Emit (PTE)

There is no increase in the potential to emit (PTE) associated with the original permit. Based on the revised limits and removal of the electric carbonization furnaces, the PTE of carbon monoxide (CO) will decrease by 1.3 tons per year. The PTE of particulate matter (PM and PM10) will decrease by 4.0 tons per year, and sulfur dioxide (SO₂) emissions will decrease by 0.5 ton per year. Also, based on stack test results conducted under CP-141-9999-00172, the controlled level of volatile organic compound (VOC) emissions was 4.5 tons per year lower than previously calculated.

Proposed Modification

The proposed modification table from the original TSD for CP-141-9999-00172 has been revised to reflect the changes to emission units and limiting conditions made in this permit modification. The revised analysis is as follows:

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (ton/yr)	PM10 (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Proposed Modification	0.0	0.0	0.0	7.5	91.2	16.0
Contemporaneous Increases	-	-	-	-	-	-
Contemporaneous Decreases	-	-	-	-	-	-
Net Emissions	0.0	0.0	0.0	7.5	91.2	16.0
PSD Significant Level	25	15	40	40	100	40

- (a) This modification is not major because the VOC, CO, and NOx emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (b) The carbon monoxide emission rates of the flares for CVD units 1 through 20 will have revised limits as follows:
 - (1) CVD units 1, 2, 3, 7, 8, 9, and 11 are limited to operating the random fiber process only. Based on maximum soak phase operation of 7200 hours per year, this limit is equivalent to 0.2 tons of CO per year for all the units combined.
 - (2) CVD units 4, 5, 6, 10, 12, 13, 14, 15, 16, 17, 18, 19, and 20 are limited to 2.41 pounds per hour, each, based on maximum soak phase operation of 5800 hours per year for the non-woven process. This limit is equivalent to 91.0 tons of CO emissions per year for all the units combined.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-141-7442-00005) application on December 10, 1996. The changes being reviewed under this permit modification will be incorporated into the submitted Part 70 application.

Federal Rule Applicability

There is no change to the applicability of Federal requirements as a result of this permit modification.

State Rule Applicability

There is no change to the applicability of any State rules as a result of this permit modification.

Conclusion

The modification of CP-141-9999-00172 will be subject to the conditions of the attached proposed **Permit Modification No. CP-141-11205-00172.**

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for Permit Modification

Source Name: AlliedSignal, Inc.
Source Location: 3520 Westmoor Street, South Bend, Indiana 46628-1373
County: St. Joseph
Permit Modification No.: 141-11205-00172
SIC Code: 3728
Permit Reviewer: Janusz Johnson

On August 21, 1999, the Office of Air Management (OAM) had a notice published in the *South Bend Tribune*, South Bend, Indiana, stating that AlliedSignal, Inc., had applied for a permit modification to revise condition language and emission limitations of Construction Permit No. 141-9999-00172. The notice also stated that OAM proposed to issue a permit modification for these changes and provided information on how the public could review the proposed modification and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit modification should be issued as proposed.

On September 15, 1999, AlliedSignal, Inc., submitted comments on the proposed construction permit. The summary of the comments and corresponding responses is as follows (changes are bolded for emphasis):

Comment 1: Revise Item 3 of the cover letter to clarify that six (6) existing CVD units are being added to the CVD-2 unit as being limited to running only the random fiber process.

Response 1: The first paragraph of Item 3 on Page 2 of the cover letter was revised as follows:

The descriptions of the CVD units contained in Item (b) of Part A.2 of Section A starting on Page 4 of the permit shall be revised to reflect AlliedSignal's request to ~~limit~~ **add** six (6) of the existing CVD units (CVD-1, CVD-3, CVD-7, CVD-8, CVD-9, and CVD-11) to the random fiber process only. **Previously, only CVD-2 was limited to operating the random fiber process.** The descriptions have also changed to clarify the initial weight of brakes per batch the units are capable of processing and the reactant gas flow rates of the units. The revisions shall be as follows:

Comment 2: Clarify the modified BACT condition, D.2.1, in Item 20 of the cover letter to state that operation of the flare is only required during the soak phase of the process.

Response 2: The revised Condition D.2.1 in Item 20 on Page 10 of the cover letter has been changed to clarify that operation of the flares is only required during the soak phase of the process. The condition has been modified in the cover letter and revised permit pages as follows (in this case changes are double underlined to distinguish them from other revisions made to the condition in the draft cover letter):

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from **the soak phase of each CVD unit's cycle** shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is **operated operating in the soak phase** and shall achieve an overall destruction efficiency of 98% with a maximum VOC emission rate of ~~0.288~~ **0.273** pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to ~~39~~ **37** tons of VOC emitted per year from ~~all of the~~ CVD units **Nos. 1 through 20** combined based on the average heat content of the process gas being 762 Btu per cubic foot and the maximum reactant gas inputs for each unit.

Comment 3: Item 24 of the cover letter should be clarified so that the revised monitoring condition, D.2.5, states operation of the flare is only required during the soak phase of the process.

Response 3: Paragraph (b) of the revised Condition D.2.1 in Item 20 on Page 10 of the cover letter has been revised to clarify that operation of the flares is only required during the soak phase of the process. Paragraph (b) of the condition has been modified in the cover letter and revised permit pages as follows (in this case changes are double underlined to distinguish them from other revisions made to the condition in the draft cover letter):

- (b) Each enclosed flare shall have a flame present at all times that its respective CVD unit is **in operation operating in the soak phase**. A thermocouple or equivalent device shall be installed and operated to monitor ~~and record~~ the presence of a pilot flame for each flare **and to sound an alarm when the flame is not detected**. In the event that a breakdown of the monitoring equipment occurs, the Permittee shall supplement monitoring with visual checks once per hour to ensure that a flame is present.

Comment 4: Clarify in Item 25 of the cover letter, paragraph (a) of the modified record keeping condition D.2.6, that records of the initial weight of brake discs per batch are not required to be kept because recording the number and type of brake discs per batch run is adequate to determine the initial weight of the brakes loaded for a particular batch, if needed.

Response 4: The revised paragraph (a) of Condition D.2.6 in Item 20 on Page 10 of the cover letter has been changed to remove the requirement of keeping a record of initial brake weight per batch. Paragraph (a) of the condition has been modified in the cover letter and revised permit pages as follows (in this case changes are double underlined to distinguish them from other revisions made to the condition in the draft cover letter):

- D.2.6(a) To document compliance with Conditions D.2.1 ~~and D.2.4~~, the Permittee shall maintain a record of the total reactant gas input to the CVDs and **initial brake disc batch weight for each batch run and** a log of the **number and type of brake discs per batch run** ~~daily ratio of reactant gas feed rate to initial batch disk weight and visible emission notations made for the CVD units and flares, along with the respective pilot flame monitoring data, any response actions taken to correct abnormal emissions, and any inspections prescribed by the Preventive Maintenance Plan.~~

Comment 5: Language should be added to Condition C.8 of the draft permit pages to indicate that documents submitted pursuant to the condition do not require certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Response 5: The following language has been added to Condition C.8 (Actions Related to Noncompliance Demonstrated by a Stack Test) on Page 11 of the revised permit pages:

The documents submitted pursuant to this condition do not require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

Comment 6: Permit Condition D.2.2 imposes a carbon monoxide (“CO”) emission limit of 2.41 lbs/hour. Allied Signal has demonstrated in its most recent testing that it meets that CO emission limit. The 2.41 lbs/hour limit is a calculated emission limit to ensure AlliedSignal does not emit more than 100 tons per year of CO from the flares for the CVDs. Based on available data and information for 1999, Allied Signal has not exceeded this underlying emission limit and has established, going forward, its compliance with the 2.41 lbs/hour CO limit.

Response 6: During the stack testing conducted on September 9, 1999, AlliedSignal demonstrated the ability to meet the CO limit when the flare was operating at a temperature of 1000 degrees Celsius. A previous test at a lower flare temperature conducted on September 8, 1999, did not meet the limited level of emissions. Based on the information currently available, the OAM considers the CVD units operating the non-woven process to be in compliance with the 2.41 lbs/hr CO limit when the flare controls for the CVDs are operating at a temperature of 1000 degrees Celsius or higher during the soak phase of the process.

Comment 7: The testing required by Permit Condition D.2.4 has been completed in accordance with the original Construction Permit requirements and no additional testing requirements are triggered by the issuance of the Modified Permit. For clarity, the TSD should recognize this undisputed circumstance.

Response 7: There are no additional testing requirements triggered by the issuance of the Permit Modification; however, this does not prevent the OAM from requesting a compliance test pursuant to 326 IAC 2-1.1-11 if such a test is deemed necessary to demonstrate compliance with an applicable limit or requirement. (Further discussion of the issue of additional stack testing is addressed in the response to comments by the USEPA later in this addendum.)

Comment 8: As a final matter, in the TSD Appendix A - Emission Calculations, AlliedSignal has reviewed the VOC emission rate calculations and has recommended parameters for calculating these VOC emissions that are based on recent data. If IDEM agrees with AlliedSignal’s calculations regarding VOC emission rates, then the Draft Modified Permit Condition D.2.1 must be revised to reflect a VOC emission limit of 0.26 lbs/MMBtu and the calculations in the TSD also must be revised accordingly.

Response 8: The following is a step by step determination of the appropriate VOC emission rate limit based on the recent data and parameters recommended by AlliedSignal, Inc.:

1. The maximum annual reactant gas volume input into all the CVD units combined based on the maximum operating hours, reactant gas flow rate, and worst case process type for each CVD unit:

CVD-1:

1 unit * 360 scfh reactant gas * 7200 hr/yr = 2,592,000 scf/yr

CVD-2,3,7,8,9,11:

6 units * 2000 scfh reactant gas * 7200 hr/yr = 86,400,000 scf/yr

CVD-4,5,6,10, & 12-21:

14 units * 4200 scfh reactant gas * 5800 hr/yr = 341,040,000 scf/yr

Total reactant gas volume for all CVD units combined = 430,032,000 scf/yr

2. An estimate of the total potential heat content of the reacted gases delivered to the flares from the CVD units can be calculated as follows assuming that the volume of the reacted gases is equivalent to the volume of reactant gases input to the CVD:

$430,032,000 \text{ scf/yr} * 713 \text{ Btu/cf} * 1 \text{ MMBtu}/10^6 \text{ Btu} = 306,612.82 \text{ MMBtu/yr}$

3. A VOC emission rate limit in terms of pounds per million British thermal units (lb/MMBtu) which will be equivalent to VOC emissions of 39.9 tons per year can be determined as follows:

$\frac{39.9 \text{ tons/yr} * 2000 \text{ lb/ton}}{306,612.82 \text{ MMBtu/yr}} = 0.260 \text{ lb/MMBtu}$

Based on these revised calculations, Condition D.2.1 on Page 16 of the modified permit pages shall be changed to reflect the VOC emission rate limitation as follows:

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from the soak phase of each CVD unit's cycle shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is operating in the soak phase and shall achieve an overall destruction efficiency of 98% with a maximum VOC emission rate of ~~0.273~~ **0.26** pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to ~~37~~ **37.7** tons of VOC emitted per year from CVD units Nos. 1 through 20 combined based on the average heat content of the process gas being ~~762~~ **713** Btu per cubic foot and the maximum reactant gas inputs for each unit.

Item 20 on Page 10 of the Permit Modification cover letter has also been revised to be consistent with the changes to D.2.1.

The TSD Appendix A calculations for uncontrolled and controlled emissions are based on the most recent stack testing results and only include estimations of the heat content of the reacted gases loaded to the flare for the purpose of estimating the emissions of nitrogen oxides (NOx). Stack testing to determine an actual NOx emission rate will be conducted as part of the initial performance testing for the new CVD-21 unit flare under Source Modification No. 141-10759-00172 and, therefore, recalculation of the estimated NOx emissions will not be necessary.

On October 1, 1999, the United States Environmental Protection Agency (USEPA), Region 5, submitted a letter on the proposed construction permit. The summary of the comments and corresponding responses is as follows (changes are bolded for emphasis):

Comment 1: The USEPA is concerned that, due to the highly variable nature of the CVD process, the source may not be capable of complying with their established limits on a continuous basis. AlliedSignal has suggested an hours of operation and pound per hour (lb/hour) limitation on all their CVD units and flare controls. Stack tests conducted for purposes of compliance may only show the emissions at a specific moment in time, and not be representative of AlliedSignal's continuous compliance of the lb/hour limit in this dynamic process.

According to the June 13, 1989 USEPA memorandum, "Guidance on Limiting Potential to Emit in New Source Permitting" from John S. Seitz of the Office of Air Quality Planning and Standards,

"If the permitting agency determines that setting operation parameters for control equipment is infeasible in a particular situation, a federally enforceable permit containing short term emission limits (e.g. lbs per hour) would be sufficient to limit potential to emit, provided that such limits reflect the operation of the control equipment, and the permit includes requirements to install, maintain and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit"

USEPA believes, that with the current information available, IDEM should consider the use of a CEM, or, if more official stack testing is conducted to verify the relationship between flare temperature and emissions of CO and NOx, a continuous temperature monitor may be considered for each CVD unit. These monitors may not only assure that this modification is minor for PSD, but their use will generate additional data for any CVD units permitted in the future.

Response 1: The USEPA requires a limit on potential to emit to be practically enforceable. For circumstances where add-on controls operate at a specified efficiency, operating parameters and assumptions which are depended on to determine that the control equipment has a given efficiency should be included so that the operating efficiency condition is enforceable as a practical matter. Because the stack tests on the flares can only demonstrate compliance with the CO emission limit for a specific point in time, a supplemental method of monitoring compliance on a more continuous basis is clearly needed. Stack testing conducted by AlliedSignal to date indicates that increasing flare temperature decreases the level of CO emissions. The IDEM, OAM, believes that monitoring of the flare temperature for CVD units which run the non-woven process would be indicative of ongoing compliance with the short term CO limits established in the permit provided that the minimum operating temperature is maintained. The OAM is requiring a continuous emission monitor (CEM) for CO to be installed on the new CVD-21 unit flare under Significant Source Modification 141-10759-00172. This CEMS will establish data to confirm that compliance over the entire batch cycle can be maintained by monitoring flare temperature. Review of the continuous emissions data from this CVD unit flare can be used to assure that this modification is minor for PSD and will generate additional information for any CVD units permitted in the future. The IDEM, OAM, reserves the authority to require additional CEMS for the existing CVD units (CVD-1 through CVD-20) in the Part 70 Operating Permit if such monitoring is determined to be necessary to demonstrate compliance based on the CVD-21 unit data.

Currently for CVD units 1 through 20, the modifications to Conditions D.2.5 (Monitoring) and D.2.6 (Record Keeping Requirements) in Items 24 and 25 of the cover letter shall be further revised as follows to incorporate continuous monitoring of the flare operating temperature (in this case changes are double underlined to distinguish them from other revisions made to the condition in the draft cover letter):

D.2.5 Monitoring

To assure compliance with Conditions D.2.1 and D.2.2:

- (a) The input **rate** of total reactant gas to each CVD unit shall be measured **once per day** over the entire batch cycle. To monitor the volatile organic compound (VOC) load to the control flare, the Permittee shall record the ~~ratio of reactant gas feed rate to brake disk batch weight at least once daily when the CVD is in operation. Unless operated under conditions for which the Preventive Maintenance Plan (PMP) specifies otherwise, the ratio shall be maintained within a range established during the latest stack test to be indicative of normal operation and in compliance with the required destruction efficiency~~ **number and type of brake discs per batch.**
- (b) Each enclosed flare shall have a flame present at all times that its respective CVD unit is ~~in operation~~ **operating in the soak phase.** A thermocouple or equivalent device shall be installed and operated to monitor ~~and record the presence of a pilot flame for each flare and to sound an alarm when the flame is not detected.~~ **For each CVD unit operating the non-woven process, the flare shall maintain a minimum operating temperature of 1000 degrees Celsius (°C) and a continuous monitoring system shall be installed and operated to monitor and record the operating temperature of the flare. This system shall be accurate to ±5.0 percent and capture temperature data at least once every fifteen (15) minutes. If the operating temperature of the flare for a CVD unit operating the non-woven process drops below the minimum operating temperature, the Permittee shall take and document response steps to return the operating temperature to the required minimum level.** In the event that a breakdown of the monitoring equipment occurs, the Permittee shall supplement monitoring with visual checks once per hour to ensure that a flame is present.
- (c) ~~Daily visible emission notations of each CVD flare stack exhaust shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.~~
 - (1) ~~For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.~~
 - (2) ~~In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.~~

~~(3) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.~~

~~(4) When an abnormal emission is observed, the Permittee shall take appropriate response actions to return the emissions to normal.~~

~~(d)~~ The Permittee shall include in its PMP a maintenance program to inspect regularly the thermocouples or equivalent devices for monitoring and recording the presence of a pilot flame, to conduct routine maintenance and calibration on such monitors, and to initiate and record appropriate response steps in the event that the monitor fails.

D.2.6(a) To document compliance with Conditions D.2.1 ~~and D.2.4~~, the Permittee shall maintain a record of the total reactant gas input to the CVDs and ~~initial brake disc batch weight for each batch run and a log of the~~ **number and type of brake discs per batch run** ~~daily ratio of reactant gas feed rate to initial batch disk weight and visible emission notations made for the CVD units and flares, along with the respective pilot flame monitoring data, any response actions taken to correct abnormal emissions, and any inspections prescribed by the Preventive Maintenance Plan.~~

(b) **To document compliance with Condition D.2.5, the Permittee shall maintain flare temperature data for CVD units operating the non-woven process and records of response steps taken as a result of operating temperature readings below the minimum operating temperature of the flares for these units.**

(b)(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

Comment 2: The Indiana Department of Environmental Management (IDEM) has conducted three official stack tests to determine appropriate emission factors for this permit. The first two tests generated emission factors that calculated CO emissions from the CVD flares to be above the significance threshold. The third test was conducted above a flare temperature of 1000 degrees [Celsius], which calculated emissions to slightly below the CO significance threshold. AlliedSignal assumed that this single stack test would be representative of the entire process, as long as the flare temperature is consistently held above 1000 degrees [Celsius] as a federally enforceable condition. While it is questionable that the source can continuously operate above this temperature level, more official stack testing should be conducted to verify the relationship between flare temperature and emissions of CO and NOx.

Response 2: The use of a surrogate monitoring parameter, in this case the flare operating temperature, as a method of demonstrating continuous compliance with a short term emission limit depends heavily on the relationship between the surrogate parameter and the pollutant emitted. AlliedSignal has conducted three recent stack tests on the flare of a large CVD unit operating the non-woven process to determine the level of carbon monoxide (CO) emitted. These tests indicate that the rate of CO emissions decreases with increased flare operating temperature, and one test conducted at the highest temperature, 1000 degrees Celsius, demonstrated compliance with the CO emission limits.

The IDEM, OAM, allows representative testing of identical units when more than one unit is installed at the same time. This type of representative testing was done on 3 of the 20 CVD flares installed under CP-141-9999-00172. In this case, it was determined that the 3 tested flares would be considered representative of the whole given that they were all being installed at the same time and that testing all 20 flares would be overly burdensome to the Permittee. The OAM considers this representative testing to be adequate for the CVD unit flares permitted under CP-141-9999-00172 and will not require additional testing of any of those units at this time. To confirm the results of the representative stack testing performed to date, data obtained from the initial performance testing of the new CVD-21 unit flare (required under Source Modification No. 141-10759-00172) will be used.

Emissions of nitrogen oxides (NO_x) from the CVD flares have not previously been tested. AP-42 emission factors for flares combusting crude propylene were used to estimate potential NO_x emissions in the draft permit. These estimations showed NO_x emissions to be below the PSD significant threshold, but are based on the assumption that the emissions from flaring the CVD process gas would be similar to flaring crude propylene. Investigation into how NO_x evolves shows that about 95% of all NO_x from stationary combustion sources is emitted as nitric oxide (NO), and NO is formed by either or both of two mechanisms, "thermal NO_x" or "fuel NO_x." "Fuel NO_x" results from the combustion of fuels that contain organic nitrogen, primarily coal or heavy oil, and is probably not a large factor of NO_x formation in this case. "Thermal NO_x" on the other hand is formed by reactions between nitrogen and oxygen in the air used for combustion and is the most likely the driving mechanism for NO_x formation in the CVD flares. The rate of formation of thermal NO_x is extremely temperature sensitive and becomes rapid at flame temperatures in the range of 3000 °F to 3600 °F (1649 °C to 1982 °C). Because it is likely that the temperature of a CVD flare flame is in this range when the measured flare temperature at the stack exhaust has been elevated to 1000 °C, there is a distinct possibility that the actual NO_x emission levels are higher than predicted by the AP-42 emission factors. Based on the information available, stack testing should be performed to confirm that the NO_x emissions from the CVD flares is not above PSD significant levels. Establishing an actual NO_x emission factor will also provide better information for future permitting determinations on CVD units. NO_x emissions testing will be conducted as part of the initial performance testing of the new CVD-21 unit flare required under Source Modification No. 141-10759-00172.

Comment 3: The USEPA also understands that these CVD units may emit a large amount of hazardous air pollutants (HAPs) such as naphthalene and benzene. Periodic stack testing may be needed for HAPs of concern to assure that these units are not subject to section 112(g) of the Clean Air Act.

Response 3: CVD units have the potential to emit a variety of hazardous air pollutants (HAPs) which are formed during the CVD reaction process from cracked natural gas and propane. Variations in the reaction conditions including temperature, residence time, and the raw materials input to the reactor can influence the amount and type of HAPs emitted. Analysis testing results and other information submitted by AlliedSignal indicate that some of the HAPs which are consistently present in measurable quantities are benzene, toluene, styrene, and naphthalene. Limited speciated stack testing of CVD units 9, 15 and 18 was conducted in the official stacks test performed on June 15, 1999, as required pursuant to CP-141-9999-00172. Results of the tests included speciated emission levels of benzene, toluene, and styrene. Naphthalene was not included in the test because the semi-volatile nature of naphthalene has made it difficult to obtain results for the compound in the past. Based on some previous official stack test results, however, naphthalene concentrations are assumed to be less than those of benzene. The results of the most recent speciated testing did not indicate that any of the tested HAPs will be emitted at levels which would constitute a "major source of hazardous air pollutants" as defined in 40 CFR 63.41. The OAM believes, based on the information available at this time, that further testing is not required to demonstrate compliance with 112(g). IDEM, OAM, reserves the authority to request speciated stack testing for HAPs in accordance with 326 IAC 2-1.1-11, 326 IAC 2-7-6(1) and 326 IAC 2-7-6(6) if such testing is determined to be necessary to demonstrate compliance with 112(g) in the future.

Appendix A: Emission Calculations

Revised Evaluation of CVD Uncontrolled and Controlled Emissions

Company Name: AlliedSignal, Inc.
Address City IN Zip: 3520 Westmoor Street, South Bend, Indiana 46628
Permit Mod. No.: 141-11205-00172
Reviewer: Janusz Johnson
Date: August 4, 1999

A maximum VOC emission rate in pounds per hour was derived from the results of stack testing performed on April 27 through the 29, 1999. The maximum uncontrolled emission rate observed during the soak phase of the non-woven process was 20.7 pounds per hour of VOC. The maximum uncontrolled emission rate observed during the soak phase of the random process was 4.87 pounds per hour VOC. These results have been utilized as the basis of the emissions calculations for the CVD units below.

Revised PTE for CVD units based on modification of CP-141-9999-00172

Revised Uncontrolled Potential to Emit for existing CVD units (based on stack testing and subsequent changes to CP-141-9999 limiting conditions):

CVD-1 (small unit, limited to random fiber only):

The potential VOC emissions were calculated based on the volume of gas input to the different-sized CVD units.

A maximum of 790 scfh of natural gas, nitrogen gas, and propane gas are input to CVD-1.

A maximum of 8170 scfh of natural gas, nitrogen gas, and propane gas are input to the size of unit stack tested.

$$16.9 \text{ tons VOC/year per large CVD} \times 790 \text{ scfh input gas} / 8170 \text{ scfh input gas} = 1.6 \text{ tons VOC per year per small CVD unit.}$$

Each unit for CVD-2, CVD-3, CVD-7 through CVD-9, and CVD-11 (large units, limited to random fiber only):

$$4.7 \text{ lbs VOC/hr} \times 7200 \text{ max hrs soak / year} \times 1 \text{ ton} / 2000 \text{ lbs} = 16.9 \text{ tons VOC per year}$$

Each unit for CVD-4 through CVD-6, CVD-10, and CVD-12 through 20 (large units, based on non-woven process as worst case):

$$20.6 \text{ lbs VOC/hr} \times 5800 \text{ max hrs soak / year} \times 1 \text{ ton} / 2000 \text{ lbs} = 59.7 \text{ tons VOC per year}$$

Total Uncontrolled Potential To Emit for CVD units 1 through 20, as limited:

$$\begin{array}{rcl}
 13 \text{ non-woven CVDs} \times 59.7 \text{ tons VOC/year} & + & 1 \text{ small random fiber unit (CVD-1)} \times 1.6 \text{ tons VOC/year} \\
 + 6 \text{ large random fiber only CVDs} \times 16.9 \text{ tons VOC/year} & = & 879.8 \text{ tons VOC per year}
 \end{array}$$

Total Controlled Potential To Emit for CVD units 1 through 20, as limited (including flare combustion emissions):

The internal flares are assumed to provide at least 98% control of the VOC emissions. Actual VOC control efficiencies determined during stack testing ranged from 98.6% to 99.3% for the non-woven process and was 99.9% for the random fiber process.

Potential VOC emissions after control are based on 98% destruction of the potential uncontrolled VOCs.

$$\text{VOC: } 879.8 \text{ tons VOC per year} \times (1 - 0.98) = 17.6 \text{ tons controlled VOC emissions per year for CVD's}$$

Potential emissions of NOx from the flare are based on AP-42 emission factors for flares (Section 13.5-4). Potential emissions of CO from the random fiber limited flares are based on stack testing results (0.0124 lb/hr) and the CO emissions for the flares which can run the non-woven process are based on a limit of 2.41 lbs/hr requested by the source which will be confirmed by further stack testing.

It is assumed that the process gas has same volume as natural gas fed into CVD, but a lower heat content of 762 Btu/CF, therefore:

$$\begin{array}{rcl}
 \text{non-woven CVD annual volume of process gas} & = & 5800 \text{ hours in soak per year} \times 7000 \text{ scfh natural gas} = 40600000.0 \text{ CF per year} \\
 \text{random fiber only CVD annual volume of process gas} & = & 7200 \text{ hours in soak per year} \times 2000 \text{ scfh natural gas} = 14400000.0 \text{ CF per year}
 \end{array}$$

Each unit for CVD-4 through CVD-6, CVD-10, and CVD-12 through 20 (large units, based on non-woven process as worst case):

$$\begin{array}{rcl}
 \text{NOx: } 40600000.0 \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton}/2000 \text{ lbs} & = & 1.1 \text{ tons per year per CVD} \\
 \text{CO: } 2.41 \text{ lbs CO/hr} \times 5800 \text{ max hrs soak/year} \times 1 \text{ ton}/2000 \text{ lbs} & = & 7.0 \text{ tons per year per CVD}
 \end{array}$$

CVD-1 (small unit, limited to random fiber only):

$$\text{CVD-1 annual volume of process gas} = 7200 \text{ hours in soak per year} \times 600 \text{ scfh natural gas} = 4320000.0 \text{ CF per year}$$

$$\begin{array}{rcl}
 \text{NOx: } 4320000.0 \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton}/2000 \text{ lbs} & = & 0.1 \text{ tons per year for CVD-1} \\
 \text{CO: } 0.0124 \text{ lbs CO/hr} \times 7200 \text{ max hrs soak/year} \times 1 \text{ ton}/2000 \text{ lbs} & = & 4.5\text{E-}02 \text{ tons per year for CVD-1}
 \end{array}$$

Each unit for CVD-2, CVD-3, CVD-7 through CVD-9, and CVD-11 (large units, limited to random fiber only):

$$\begin{array}{rcl}
 \text{NOx: } 14400000.0 \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton}/2000 \text{ lbs} & = & 0.4 \text{ tons per year per CVD} \\
 \text{CO: } 0.0124 \text{ lbs CO/hr} \times 7200 \text{ max hrs soak/year} \times 1 \text{ ton}/2000 \text{ lbs} & = & 4.5\text{E-}02 \text{ tons per year per CVD}
 \end{array}$$

TOTAL NOx and CO from flares for CVD units 1 through 20, as limited:

$$\begin{array}{rcl}
 \text{NOx: } 1.1 \text{ tons/yr per non-woven CVD} \times 13 & + & 0.1 \text{ tons/yr for CVD-1} & + & 0.4 \text{ tons/yr for random fiber limited CVD} \times 6 \\
 & = & 16.0 \text{ tons NOx/year for all CVD's}
 \end{array}$$

$$\begin{array}{rcl}
 \text{CO: } 7.0 \text{ tons/yr per non-woven CVD} \times 13 & + & 4.5\text{E-}02 \text{ tons/yr for CVD-1} & + & 4.5\text{E-}02 \text{ tons/yr for random fiber limited CVD} \times 6 \\
 & = & 91.2 \text{ tons CO/year for all CVD's}
 \end{array}$$

Hazardous Air Pollutant (HAP) Emissions

Test results for a large CVD unit running non-woven process:

HAP	uncontrolled emission rate (lb/hr)	PTE before controls * (ton/yr)	PTE after controls (98% eff.) (ton/yr)
benzene	2.11	6.12	0.12
toluene	0.225	0.65	0.01
styrene	0.209	0.61	0.01

* lbs HAP/hr x 5800 max hrs soak/year x 1 ton / 2000 lbs = tons HAP/yr

Test results for a large CVD unit running random fiber process:

HAP	uncontrolled emission rate (lb/hr)	PTE before controls * (ton/yr)	PTE after controls (98% eff.) (ton/yr)
benzene	1.90E-03	6.84E-03	1.37E-04
toluene	2.40E-03	8.64E-03	1.73E-04
styrene	1.70E-03	6.12E-03	1.22E-04

* lbs HAP/hr x 7200 max hrs soak/year x 1 ton / 2000 lbs = tons HAP/yr

Revised PSD modification summary based on limits established in permit modification:

Emissions for the CVD units are based on the calculations above. The units below are all considered part of the same modification for the purpose of PSD analysis:

six (6) CVD units (CVD-15 through CVD-20) and the modified CVD-2 (limited to random fiber) with VOC controlled at 98%:

VOC:	59.7	tons per year potential VOC x (1-0.98) x 6 =	7.2	controlled tons per year
	16.9	tons per year potential VOC x (1-0.98) x 1 =	0.3	controlled tons per year

Flare emissions for CVD unit nos. 1 through 20:

NOx:	16.0	tons per year
CO:	91.2	tons per year

Note: emissions from the Electric Carbonization Furnaces, ECF-4 and 5, have been removed from this analysis because they were taken out of the permit (CP-141-9999) and will not be constructed as originally planned.

Total Estimated Project PTE after controls, as limited

PM	0.0
PM10	0.0
SO2	0.0
NOx	16.0
VOC	7.5
CO	91.2